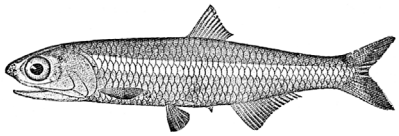
CATCH SHARES IN ACTION

Peruvian Anchoveta Northern-Central Stock Individual Vessel Quota Program



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SEASALT
Secure
Exclusive
Accountable
Limited
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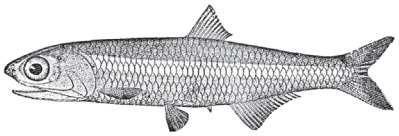

SPECIAL DESIGN FEATURES

MULTI-SPECIES, INDIVIDUALLY-ALLOCATED, QUOTA-BASED, TRANSFERABLE

The Peruvian Anchoveta Northern-Central Stock Individual Vessel Quota Program is a catch share program that manages the largest volume fishery in the world. The goals of the program were focused on the economic improvement of the fishery through reduction of fleet capacity and lengthening of the fishing season. Additional biological and social goals were identified and seen as vital to ensure program success. Key design elements include restrictions on transferability to help limit consolidation and an industry-sponsored social fund to assist with crew retirement and labor transition. To reflect the short-lived nature of anchoveta, management is structured into two fishing seasons per year. Each year, a five million metric ton reserve of anchoveta biomass is set aside to promote long term stock health.

SYNOPSIS

The northern-central stock of anchoveta occurs above 16˚ S and is managed exclusively by the Peruvian government. Four distinct fleets target anchoveta; steel hulled vessels, wooden hulled vessels known as "Vikings," low-scale vessels (with hold capacities between 10 – 32.5 cubic meters) and smaller artisanal vessels (with hold capacities less than 10 cubic meters). The steel and wooden fleets comprise the industrial sector, targeting anchoveta with purse seines beyond 10 nautical miles from shore. In 2009, the Peruvian government implemented an Individual Vessel Quota (IVQ) program for industrial fishing of the northern-central stock of Peruvian anchoveta (*Engraulis ringens*) and white anchoveta (*Anchoa nasus*). The industrial fishery includes approximately 1,000 vessels and employs nearly 30,000 people in harvesting and processing (ILO, 2010). Catches from the industrial fishery supply the reduction market for fish oil and fishmeal.

Anchoveta biomass is highly variable, with abundance greatly dependent on environmental conditions such as El Niño. For example, the average annual catch of the industrial fleet in the period between 2001 and 2009 was 7.1 million metric tons, but in the El Niño year of 2010, landings fell sharply to 3.1 million metric tons. Based on the biological availability of anchoveta, there can be up to two fishing seasons per year. Fisheries are important to the Peruvian economy as seafood exports contribute about 5% of total export revenue, second only to the mining industry (IC, 2011). Peru is currently the second-largest producer of seafood products in the world by volume.

Road to a Catch Share

The industrial anchoveta fishery has experienced multiple periods of rapid growth and subsequent collapse since its development in the 1950s (Paredes and Gutierrez, 2008). Driven by the rising demand for fishmeal and fish oil, landings peaked at 12 million metric tons in 1970 and accounted for 20% of global catch. However, continued overfishing led to the collapse of the anchoveta stock in the following decades. Between the years of 1972-1986, average catch fell to 2.5 million metric tons. Low catches were especially pronounced during the strong El Niño seasons of 1972 and 1982.

Through the late 1980s and into the 1990s, the anchoveta stock began to recover. However, this recovery was met with growing fleet capacity. To manage growth, the Peruvian government introduced the General Law of Fisheries in 1992 (Ley General de Pesca Nº 25977), requiring existing vessels to be decommissioned prior to new vessel construction. Although new vessels were required to have an equal or lower hold capacity than replaced decommissioned vessels, fishery participants still found ways to increase their capacity (Aranda, 2009).

Into the 21st century, the fishery increasingly turned into an intense race for fish with two short seasons (Paredes and Gutierrez, 2008). Estimates of harvesting overcapacity ranged from 1.35 to 2 times more than the level needed to harvest optimally (Paredes, 2010). Coastal processing capacity was estimated at 3 to 5 times its optimal size by various sources (Tveteras et al., 2011). The fishing season of Peruvian anchoveta decreased from 230 days in 2000 to 50 days in 2007 (Paredes, 2010), while the number of active fishing vessels increased from 350 to 1,250. Shortened seasons also reduced the quality of fishmeal produced by processing plants that had to handle surges of supply.

In 1992, the World Bank first proposed rights-based management to better manage the fishery. A decade later, Peru's Vice Ministry of Production (formerly Vice Ministry of Fisheries) proposed implementing a transferable quota system, a type of catch share, for the industrial fishery to address the World Bank's proposal. In 2006, the World Bank committed U.S. $330 million in an environmental development policy loan (DPL) for Peru, part of which would fund development of the catch share program for the industrial Peruvian anchoveta sector. On June 22, 2008, Peru announced through a government decree that an IVQ system would begin for the 2009 fishing season in the industrial fishery (Produce, 2008).

Performance

The catch share program is meeting its primary goals of improving the economic performance of the industrial fishery and eliminating derby-style fishing. Overcapacity has been greatly reduced and the length of the fishing season has more than doubled since program implementation (Tveteras et al., 2011). Product quality has increased due to improved handling and timing of deliveries, resulting in a 37% increase in the mean price of anchoveta. Safety conditions have also improved due to the longer fishing seasons, with the number of accidents decreasing by 28% in the first year of the program. Meanwhile, the fishery has achieved catch limit compliance in almost every year since program implementation, with the only slight overage (less than 0.3%) occurring in 2011 (FishSource, 2011).

However, the anchoveta fishery as a whole continues to face some challenges. El Niño events and warmer waters in 2010 and 2012 significantly constrained the anchoveta biomass, which resulted in reduced catch limits. Additionally, managers and stakeholders recognize the need to improve management of the low-scale and artisanal sectors, which are not currently included in the catch share program.

STEP 1 IN ACTION

Define Program Goals

The catch share program was primarily implemented to improve the economic performance of the fishery. Biological goals were seen as vital to achieving economic performance, and social goals were also identified and accounted for with specific design features.

Biological goals included maintaining a healthy anchoveta population, reducing discards (then estimated at 10%), limiting bycatch of non-target species and managing water pollution at unloading zones. Specific economic goals included improving economic efficiency by reducing capacity and lengthening the season to allow for improved offloading and fish handling. Social goals included improving fishing safety and assisting crew with retirement or transition to other industries.

STEP 2 IN ACTION

Define and Quantify the Available Resource

The catch share program includes all industrial fishing effort on the northern-central stock of Peruvian anchoveta (*Engraulis ringens*) and white anchoveta (*Anchoa nasus*). Since white anchovy account for only a few percent of total landings, the two species are managed together under one quota. Two distinct stocks of the primary species, Peruvian anchoveta, are found within Peru's exclusive economic zone (EEZ). Peru exclusively manages and fishes the northern-central stock (found north of 16˚ S), while Peru and Chile both manage and fish the southern stock (found south of 16˚ S). Peru manages its portion of the southern stock under a separate IVQ program. The northern-central stock is significantly larger, with industrial fishing of this stock accounting for between 70-90% of total anchoveta landings in Peru in any given year (FAO, 2005; Produce, 2012).

Anchoveta is a short-lived, rapidly reproducing species with wide fluctuations in biomass. Managers account for these fluctuations by setting catch limits for two separate seasons per year, the first beginning in April and the second beginning in November. The Marine Institute of Peru (IMARPE) develops stock assessments based on acoustic surveys before each season (Global Trust, 2009). To ensure a stable population of anchoveta, Peruvian law stipulates a minimum anchoveta biomass of 5 million metric tons must be maintained. Catch limits are set to achieve this goal, creating a buffer for this highly variable stock.

Non-target species are not directly included in the program. However, the impact of the fishery on non-target species is assessed, and regulations to protect bycatch species are in place (FishSource, 2011). Peruvian law has established a fishery-wide bycatch limit of 5% of total catch, with fines issued for any overages. Bycatch and discard rates are generally considered to be small, but given the size of the fishery even small rates can imply large absolute numbers.

STEP 3 IN ACTION

Define Eligible Participants

The program allocates quota to individual vessels fishing for anchoveta that will be used for the production of fishmeal and fish oil, categorized as "indirect human consumption" (national decree D.L. No 1084 of 2008). Vessels possessing fishing permits for anchoveta, and a functional 24/7 Satellite Monitoring System (SISESAT) are eligible to participate in the program. Vessels targeting anchoveta for direct human consumption, such as the low-scale and artisanal fleets, do not participate in the catch share program.

The catch share program does not include explicit limits on the concentration of shares, but there are restrictions on transferability to limit concentration. Entities may own multiple vessels and the shares attached to these vessels. Entities are not limited in the amount of shares they can hold, but permanent transfers can only occur between vessels owned by the same entity. New entrants may enter the fishery by purchasing vessels with the appropriate permits and associated shares (Tveteras et al., 2011).

STEP 4 IN ACTION

Define the Privilege

The program allocates quota-based privileges for Peruvian anchoveta and white anchoveta under one single share. Shares are valid for 10 years to promote security and stability in the fishing industry. Shares can be revoked for non-compliance with the program and for violation of other fishery regulations. The long term share is defined as a percent of the catch limit for each of two seasons. Each season, vessels are permitted to catch a specified amount of fish calculated based on their share and the total catch limit.

The program allows both permanent and temporary transfers of shares. Permanent transfers are allowed between vessels owned by the same entity. With such transfers, the owner must specify any vessels that will not be used for fishing. In practice, quota holders can transfer shares between different entities by purchasing vessels and the associated shares. The program also allows temporary transfers for individual seasons or for a maximum period of three years. This can subsequently be renewed for another three-year period. To maintain fleet composition, transfers between the two categories of steel and wooden vessels are not permitted. Recognizing the occurrence of periodic stock fluctuation due to environmental events, shares are not rolled over between seasons.

STEP 5 IN ACTION

Assign the Privilege

With input from fishermen and scientists, the Ministry of Production determined the criteria for initial allocation and share eligibility. Eligible participants included steel and wooden hull vessels holding licenses prior to June 22, 2008, the date the program was announced. A total 1,763 vessels and the associated 835 vessel owners were eligible for initial allocation.

Managers used the vessels' highest catch in the control period of January 2004 through June 2008 to inform catch history allocation. Different allocation formulas were applied to the steel hull and wooden hull fleets. For the steel hull fleets, 60% of a vessel's allocation was weighted based on catch history and 40% was weighted on holding capacity (Galarza, 2010). For the wooden hull fleet, catch history was the sole determinant, weighted at 100% (Galarza, 2010).

To maintain some flexibility in quota administration, managers reserve 2.2% of the total fishing quota for each fishing season as an anchoveta "contingency stock" (Salazar, 2010).

STEP 6 IN ACTION

Develop Administrative Systems

The program is administered by the Ministry of Production and funded with tax contributions stemming from fishing companies. The program is integrated into the national fisheries law, the General Law of Fisheries (Ley General de Pesca No 25977), which applies an adaptive management program for the fishery. Key tasks include catch accounting, tracking of quota transfers, enforcement and setting catch limits for the fishery.

Catch accounting relies on data from independent audit companies that monitor and record landings. The monitoring program began in 2004 and covers all landing sites with a total of 296 control points. Landings are subtracted from vessel quota holdings to determine the remaining vessel balance and whether overages have occurred. Between 5-10% of the vessels carry on-board observers at any given time to provide data for estimates of bycatch and discards. All vessels are required to have functioning vessel monitoring systems that track vessel locations.

Each year, IMARPE conducts at least two acoustic surveys for anchoveta and predator species. Combined with plankton/eggs/larval surveys, oceanographic and satellite data and other data of the fishery, these efforts form the basis of IMARPE's long-term monitoring of the ecosystem, providing the information necessary for catch limit setting and adaptive management.

The costs of managing the fishery are funded in a number of different ways, primarily through industry contributions. Program administration costs are covered through taxes on fishing operations while the industry directly contracts and pays for vessel monitoring and for the dockside monitoring and auditing program. Additionally, program participants contribute to the social fund FONCOPES. The contribution size is based on the amount of quota per vessel and the number of crew members (Galarza, 2010). FONCOPES provides a benefits program for early retirement of crew, training in technical careers and assistance for crew to start small businesses.

STEP 7 IN ACTION

Assess Performance and Innovate

Three years after implementation, the catch share program is meeting its goals. The program has more than doubled the length of the fishing season (Tveteras et al., 2011), which has improved the timing of deliveries, increased product quality and driven higher prices. Compliance with catch limits and safety within the fishery have both improved significantly.

In particular, a handful of administrative innovations have fostered the program's success. For example, the Ministry of Production has started publishing the names of vessels with illegal fishing permits and the organization representing the largest fishmeal producers, Sociedad Nacional de Pesquería, prohibits members from purchasing anchoveta from these vessels (Tveteras, 2011). FONCOPES, the specially designed social fund, has collected U.S. $10 million and has assisted in the voluntary retirement of 350 fishermen and the labor transition of 400 workers.

Some challenges still persist in the fishery. Anchoveta stocks are subject to high annual fluctuation, largely as a result of environmental conditions. This makes management more challenging and may impact fishery performance in any given season. The fishing season of 2010 was subject to an early closure due to the unusually high proportion of juveniles being caught. El Niño events in both 2010 and 2012 drastically reduced the anchoveta catch limit for those fishing seasons. Due to the natural fluctuations in the stock, more time will need to pass to fully assess the biological performance of the program. In the meantime, there is a need for increased surveillance and on-board monitoring to better track and prevent discarding of juveniles and excess catch.

There is a continued need to manage fishing mortality from sources outside of the program. Though they once only represented a small portion of total anchoveta catch, low-scale and artisanal fishing have steadily increased and there is currently no catch limit in place for these sectors. Peruvian law specifies that catches by these fleets are to supply the direct human consumption market, but given that the fishmeal and oil markets are significantly more lucrative for fishermen, there are strong indications that a considerable portion is, in reality, offered for fishmeal production (Tveteras, 2011).

The catch share program is helping to illuminate these challenges and can serve as a platform for solving them over time. The need became more prominent in the 2012 season, when the anchoveta quota was reduced to 810,000 metric tons largely due to environmental conditions. Although the 2013 season has since shown signs of stock recovery, with a catch limit set at 2.05 million metric tons, the need for comprehensive management covering all sources of anchoveta mortality is integral to the long-term health of the fishery.

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